

WHAT IS CLAIMED IS:

1. A preparation comprising encapsulated chelating agents comprising at least one member of a first group, at least one member of a second group and at least one member of a third group,
 - 5 wherein members of the first group are selected from the group consisting of R-(+)-alpha-lipoic acid, S-(-)-alpha-lipoic acid, R/S-alpha-lipoic acid, R/S-gamma-lipoic acid, isomers of alpha lipoic acid, dihydrolipoic acid or DHLA, animal and vegetable oils, hydrocarbon oils, ester oils, silicone oils, higher fatty acids, higher alcohols, sun-screening agents, vitamins, and ferulic acid;
 - 10 members of the second group comprises at least one chelating group; and members of the third group are selected from the group consisting of lecithin, phosphatidylcholine, phosphatidylserine, phosphatidylethanolamine, dilinoleylphosphatidylcholine, lysolipids, dipalmitoylphosphatidylcholine, distearoylphosphatidylcholine, phosphatidylcholine, phosphatidic acid, sphingomyelin,
 - 15 cholesterol, cholesterol sulfate, cholesterol hemisuccinate, tocopherol hemisuccinate, phosphatidylethanolamine, phosphatidylinositol, fatty acids, palmitic acid, stearic acid, oleic acid, linolenic acid, linoleic acid, glycosphingolipids, glucolipids, glycolipids, sulphatides, lipids bearing sulfonated mono-, di-, oligo- or polysaccharides, lipids with ether and ester-linked fatty acids, triglycerides, lipoproteins, cholesterol, a lipid and a
 - 20 polymerized lipid,
 - wherein at least about 1% of members from the first, second or third group in the preparation are encapsulated in a microsphere or a liposome, and the microsphere or liposome comprises a member of the third group.
- 25 2. The preparation of claim 1, wherein one or more members of the first group, one or more members of the second group, and one or more members of the third group are admixed to generate a microsphere or a liposome.
3. A preparation comprising encapsulated bioavailable chelating agents
 - 30 comprising at least one member of a first group, at least one member of a second group and at least one member of a third group,
 - wherein members of the first group are selected from the group consisting of R-(+)-alpha-lipoic acid, S-(-)-alpha-lipoic acid, R/S-alpha-lipoic acid, R/S-gamma-lipoic acid, other isomers of alpha lipoic acid, dihydrolipoic acid or DHLA, animal and

vegetable oils, hydrocarbon oils, ester oils, silicone oils, higher fatty acids, higher alcohols, sun-screening agents, vitamins, and ferulic acid,

wherein at least about 1% of the members of the first group in the preparation are encapsulated in a microsphere or a liposome;

5 members of the second group are selected from the group consisting of EDTA (ethylene-diaminetetraacetic acid), ethyleneglycol-bis[beta-aminoethyl ether]-N,N'-tetraacetic acid (EGTA), diethylenetriamine-pentaacetic acid (DTPA), triethylenetetraaminehexaacetic acid (TTHA), N-hydroxyethylenediaminehexaacetic-acid (HEDHA), 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA), 1,4,7,10-
10 tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid (DOTA), N'-hydroxyethylenediamine-N,N,N'-triacetic acid (HEDTA), other polyaminopolycarboxylic acids, iminodiacetic acid (IDA), cyclam, penicillamine, dimercaptosuccinic acid, tartrate, thiomalic acid, crown ethers, nitrilotriacetate (NTA), 3,6-dioxaoctanedithioamide, 3,6-dioxaoctanediamide, salicyladoximine, dithio-oxamide, 8-hydroxyquinoline,
15 cupferron, 2,2'-thiobis(ethyl acetoacetate), 2,2'-dipyridyl, and derivatives thereof,

wherein at least about 1% of the members of the second group in the preparation are encapsulated in a microsphere or a liposome; and

members of the third group are selected from the group consisting of lecithin, phosphatidylcholine, phosphatidylserine, phosphatidylethanolamine,
20 dilinoleylphosphatidylcholine, lysolipids, dipalmitoylphosphatidylcholine, distearoylphosphatidylcholine, phosphatidylcholine, phosphatidic acid, sphingomyelin, cholesterol, cholesterol sulfate, cholesterol hemisuccinate, tocopherol hemisuccinate, phosphatidylethanolamine, phosphatidylinositol, fatty acids, palmitic acid, stearic acid, oleic acid, linolenic acid, linoleic acid, glycosphingolipids, glucolipids, glycolipids,
25 sulphatides, lipids bearing sulfonated mono-, di-, oligo- or polysaccharides, lipids with ether and ester-linked fatty acids, triglycerides, lipoproteins, cholesterol, a lipid and a polymerized lipid,

wherein at least about 1% of the members of the third group in the preparation are encapsulated in a microspheres or a liposome, and the microsphere or liposome
30 comprises a member of the third group.

4. The preparation of claim 1, wherein at least about 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 16%, 17%, 18%, 19%, 20%, 21%, 22%, 23%,

24% or 25% of the one or more members from the first, second or third group in the preparation are encapsulated in a microsphere or a liposome.

5 5. The preparation of claim 4, wherein at least about 26%, 27%, 28%, 29%, 30%, 31%, 32%, 33%, 34%, 35%, 36%, 37%, 38%, 39%, 40%, 41%, 42%, 43%, 44%, 45%, 46%, 47%, 48% or 49% of the one or more members from the first, second or third group in the preparation are encapsulated in a microsphere or a liposome.

10 6. The preparation of claim 5, wherein at least about 50%, 51%, 52%, 53%, 54%, 55%, 56%, 57%, 58%, 59%, 60%, 61%, 62%, 63%, 64%, 65%, 66%, 67%, 68%, 69%, 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% or 99%, or more of the one or more members from the first, second or third group in the preparation are encapsulated in a microsphere or a liposome.

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7. A kit or a formulation comprising two preparations, a first preparation and a second preparation, wherein said first preparation comprises a phospholipid, a chelating agent, magnesium chloride, and alpha lipoic acid; and the second preparation comprises diindolemethane, grape extract or grape skin extract or wine extract, calcium D-glucarate, medium chain triglycerides or a phospholipid or a combination thereof.

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8. The kit or a formulation of claim 7, wherein the grape extract or grape skin extract or wine extract is a red grape extract, a red grape skin extract or a red wine extract.

25 9. The kit or a formulation of claim 7, wherein the chelating agent comprises EDTA (ethylene-diaminetetraacetic acid), diethylenetriamine-pentaacetic acid (DTPA), ethyleneglycol-bis[beta-aminoethyl ether]-N,N'-tetra-acetic acid (EGTA), triethylenetetraaminehexaacetic acid (TTHA), N-hydroxyethylenediaminehexaacetic-acid (HEDHA), 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA), 1,4,7,10-tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid (DOTA), N'-hydroxy-ethylenediamine-N,N,N'-triacetic acid (HEDTA), other polyaminopolycarboxylic acids, iminodiacetic acid (IDA), cyclam, penicillamine, dimercaptosuccinic acid, tartrate, thiomalic acid, crown ethers, nitrilotriacetate acid (NTA), 3,6-dioxaoctanedithioamide,

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3,6-dioxaoctanediamide, salicyladoximine, dithio-oxamide, 8-hydroxyquinoline, cupferron, 2,2'-thiobis(ethyl acetoacetate), 2,2'-dipyridyl or derivatives thereof.

10. A preparation comprising diindolemethane, grape extract or grape skin extract
5 or wine extract, calcium D-glucarate, a medium chain triglyceride, a phospholipid, and at least one vitamin B9 molecule.

11. The preparation of claim 10, wherein the grape extract or grape skin extract or wine extract is a red grape extract, a red grape skin extract or a red wine extract.

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12. The preparation of claim 10, wherein the at least one vitamin B9 molecule is selected from the group consisting of folate, folic acid and folinic acid.

13. The preparation of claim 12, wherein the vitamin B9 molecule comprises
15 folic acid and folinic acid.

14. A kit or a formulation comprising two preparations, a first preparation and a second preparation, wherein said first preparation comprises a plant indole, indole-3-carbinol (I3C) or its dimer 3,3'-diindolylmethane (DIM), grape extract or grape skin
20 extract or wine extract, calcium D-glucarate, medium chain triglycerides, a phospholipid, and at least one vitamin B9 molecule; and the second preparation comprises a phospholipid, a chelating agent, magnesium chloride and alpha lipoic acid.

15. The kit or a formulation of claim 14, wherein the chelating agent comprises
25 EDTA (ethylene-diaminetetraacetic acid), diethylenetriamine-pentaacetic acid (DTPA), ethyleneglycol-bis[beta-aminoethyl ether]-N,N'-tetra-acetic acid (EGTA), triethylenetetraaminehexaacetic acid (TTHA), N-hydroxyethylenediaminehexaacetic-acid (HEDHA), 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA), 1,4,7,10-tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid (DOTA), N'-hydroxy-
30 ethylenediamine-N,N,N'-triacetic acid (HEDTA), other polyaminopolycarboxylic acids, iminodiacetic acid (IDA), cyclam, penicillamine, dimercaptosuccinic acid, tartrate, thiomalic acid, crown ethers, nitrilotriacetate acid (NTA), 3,6-dioxaoctanedithioamide, 3,6-dioxaoctanediamide, salicyladoximine, dithio-oxamide, 8-hydroxyquinoline, cupferron, 2,2'-thiobis(ethyl acetoacetate), 2,2'-dipyridyl or derivatives thereof.

16. The kit or a formulation of claim 14, wherein the at least one vitamin B9 molecule is selected from the group consisting of a folate, a folic acid and a folinic acid.

5 17. The kit or a formulation of claim 16, wherein the vitamin B9 molecule comprises folic acid and folinic acid.

18. A method for detoxification of an animal comprising administering an effective amount of the preparation of claim 1.

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19. A method for detoxification of an animal comprising administering an effective amount of the formulation of claim 7 or claim 14.

20. A method for detoxification of an animal comprising administering an effective amount of the preparation of claim 10.

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21. The method of claim 18, claim 19 or claim 20, wherein the detoxification comprises heavy metal detoxification.

20 22. The method of claim 21, wherein the metal is arsenic, lead, cadmium or mercury.

23. The method of claim 18, claim 19 or claim 20, wherein the animal is a human.

25 24. The method of claim 18, claim 19 or claim 20, wherein formulation or preparation is administered by inoculation, infusion or injection, topical application or by absorption through epithelial or mucocutaneous linings.

25. A liquid comprising the preparation of claim 1, or formulation of claim 7 or claim 14, or preparation of claim 10.

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26. A capsule, tablet or pill comprising the preparation of claim 1, or formulation of claim 7 or claim 14, or preparation of claim 10.

27. A food or food supplement comprising the preparation of claim 1, or formulation of claim 7 or claim 14, or preparation of claim 10.

28. The food or food supplement of claim 27, comprising a flavored bar, a power
5 bar, a diet bar, an energy bar or a nutritional bar.

29. A method for maintaining the health of a tissue comprising administering an effective amount of the preparation of claim 1, or formulation of claim 7 or claim 14, or preparation of claim 10.
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30. The method of claim 29, wherein the tissue is a breast tissue or a prostate tissue.

31. A method for ameliorating a disease or condition in an individual comprising
15 administering an effective amount of the preparation of claim 1, or formulation of claim 7 or claim 14, or preparation of claim 10.

32. The method of claim 31, wherein the disease or condition affects breast tissue or prostate tissue.
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33. The preparation of claim 1, the formulation of claim 7 or claim 14, or preparation of claim 10, wherein at least a fraction of the microsphere or liposome further comprises a gas comprising a nitrogen gas, oxygen gas, atmospheric air, gaseous mixtures containing nitrogen gas, gaseous mixtures containing oxygen gas, or a combination
25 thereof.

34. The preparation of claim 1, the formulation of claim 7 or claim 14, or preparation of claim 10, wherein the microsphere or liposome is homogeneous in size or in content, or, heterogeneous in size or in content.
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35. A preparation or formulation comprising encapsulated chelating agents comprising at least one member of a first group, at least one member of a second group and at least one member of a third group,
wherein members of the first group comprise at least one hydrophobic antioxidant;

members of the second group comprises at least one chelating group; and
members of the third group comprise at least one member selected from the group consisting of lecithin, phosphatidylcholine, phosphatidylserine, phosphatidylethanolamine, dilinoleylphosphatidylcholine, lysolipids, dipalmitoylphosphatidylcholine,
5 distearoylphosphatidylcholine, phosphatidylcholine, phosphatidic acid, sphingomyelin, cholesterol, cholesterol sulfate, cholesterol hemisuccinate, tocopherol hemisuccinate, phosphatidylethanolamine, phosphatidylinositol, fatty acids, palmitic acid, stearic acid, oleic acid, linolenic acid, linoleic acid, glycosphingolipids, glucolipids, glycolipids, sulphatides, lipids bearing sulfonated mono-, di-, oligo- or polysaccharides, lipids with
10 ether and ester-linked fatty acids, triglycerides, lipoproteins, cholesterol, a lipid, a polymerized lipid and equivalent compounds,
wherein at least about 1% of members from the first, second or third group in the preparation are encapsulated in a microsphere or a liposome.

15 36. A preparation or formulation comprising at least one member of a first group and at least one member of a second group, wherein the member of the first group comprises a plant indole, and the member of the second group comprises a plant flavonoid, a polyphenol, a stilbene, a 3,5,4'-trihydroxy stilbene, a resveratrol, a piceatannol, a grape extract, a grape skin extract or a wine extract, or an equivalent
20 compound.

37. A preparation or formulation comprising at least one member of a first group and at least one member of a second group, wherein the member of the first group comprises a plant indole, and the member of the second group comprises a D-glucaric
25 acid, a salt of a D-glucaric acid, a potassium hydrogen D-glucarate (PHG), a derivatized D-glucaric acid, a D-glucaro-1,4-lactone, a 1,4-GL, 2-keto-3-deoxy-D-glucarate, a 4-deoxy-5-keto-D-glucarate, or an equivalent compound.

38. A preparation or formulation comprising at least one member of a first group
30 and at least one member of a second group, wherein the member of the first group comprises a plant indole, and the member of the second group comprises a medium chain triglyceride (MCT).

39. The preparation or formulation of claim 38, wherein at least half of the content of the preparation or formulation comprises at least 80% of MCTs having a length of between C₅ and C₁₁.

5 40. The preparation or formulation of claim 38, wherein the MCT is derived from coconut oil, palm kernel oil, camphor tree drupes, butter or a combination thereof.

41. The preparation or formulation of claim 38, wherein the MCT comprises a lauric oil, or glycerol esters of caprylic acid, octanoic acid, capric acid or decanoic acid.

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42. A preparation or formulation comprising at least one member of a first group and at least one member of a second group, wherein the member of the first group comprises a plant indole, and the member of the second group comprises lecithin, phosphatidylcholine, phosphatidylserine, phosphatidylethanolamine, 15 dilinoleylphosphatidylcholine, lysolipids, dipalmitoylphosphatidylcholine, distearoylphosphatidylcholine, phosphatidylcholine, phosphatidic acid, sphingomyelin, cholesterol, cholesterol sulfate, cholesterol hemisuccinate, tocopherol hemisuccinate, phosphatidylethanolamine, phosphatidylinositol, fatty acids, palmitic acid, stearic acid, oleic acid, linolenic acid, linoleic acid, glycosphingolipids, glucolipids, glycolipids, 20 sulphatides, lipids bearing sulfonated mono-, di-, oligo- or polysaccharides, lipids with ether and ester-linked fatty acids, triglycerides, high density lipoprotein, low density lipoprotein, cholesterol, or other lipids or polymerized lipids or derivatives thereof.

43. The preparation or formulation of claims 36 to 42, wherein the plant indole 25 comprises an indole-3-carbinol (I3C) or its dimer 3,3'-diindolylmethane (DIM), grape extract or grape skin extract or wine extract.

44. A preparation or formulation comprising at least one member of a first group and at least one member of a second group, wherein the member of the first group 30 comprises a medium chain triglyceride (MCT), and the member of the second group comprises a D-glucaric acid, a salt of a D-glucaric acid, a potassium hydrogen D-glucarate (PHG), a derivatized D-glucaric acid, a D-glucaro-1,4-lactone, a 1,4-Gl, 2-keto-3-deoxy-D-glucarate, a 4-deoxy-5-keto-D-glucarate, or an equivalent compound.

45. A preparation formulated for oral administration comprising a chelating agent and a phospholipid, wherein the chelating agent and phospholipid are encapsulated in a microsphere or liposome comprising a compound selected from the group consisting of lecithin, phosphatidylcholine, phosphatidylserine, phosphatidylethanolamine, 5 dilinoleylphosphatidylcholine, lysolipids, dipalmitoylphosphatidylcholine, distearoylphosphatidylcholine, phosphatidylcholine, phosphatidic acid, sphingomyelin, cholesterol, cholesterol sulfate, cholesterol hemisuccinate, tocopherol hemisuccinate, phosphatidylethanolamine, phosphatidylinositol, fatty acids, palmitic acid, stearic acid, oleic acid, linolenic acid, linoleic acid, glycosphingolipids, glucolipids, glycolipids, 10 sulphatides, lipids bearing sulfonated mono-, di-, oligo- or polysaccharides, lipids with ether and ester-linked fatty acids, triglycerides, lipoproteins, cholesterol, a lipid, a polymerized lipid and a derivatized lipid.

46. The preparation of claim 45, wherein the chelating agent comprises disodium 15 EDTA (ethylene-diaminetetraacetic acid), diethylenetriamine-pentaacetic acid (DTPA), ethyleneglycol-bis[beta-aminoethyl ether]-N,N'-tetra-acetic acid (EGTA), triethylenetetraaminehexaacetic acid (TTHA), N-hydroxyethylenediaminehexaacetic-acid (HEDHA), 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA), 1,4,7,10-tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid (DOTA), N'-hydroxy- 20 ethylenediamine-N,N,N'-triacetic acid (HEDTA), other polyaminopolycarboxylic acids, iminodiacetic acid (IDA), cyclam, penicillamine, dimercaptosuccinic acid, tartrate, thiomalic acid, crown ethers, nitrilotriacetate acid (NTA), 3,6-dioxaoctanedithioamide, 3,6-dioxaoctanediamide, salicyladoximine, dithio-oxamide, 8-hydroxyquinoline, cupferron, 2,2'-thiobis(ethyl acetoacetate), 2,2'-dipyridyl or derivatives thereof.

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47. The preparation of claim 45, wherein the phospholipid comprises alpha lipoic acid.

48. The preparation of claim 45, wherein the preparation comprises disodium 30 EDTA, phospholipid, magnesium chloride and alpha lipoic acid.

49. The preparation of claim 48, wherein the preparation comprises 1 gm of disodium EDTA, 30 gm of phospholipid, 150 mg of magnesium chloride and 100 mg of alpha lipoic acid.

50. A preparation formulated for oral administration comprising indole-3-carbinol (I3C) or its dimer 3,3'-diindolylmethane (DIM), calcium D-glucarate and a red wine extract or grape extract or grape skin extract, wherein the indole-3-carbinol (I3C) or its dimer 3,3'-diindolylmethane (DIM), calcium D-glucarate and red wine extract are encapsulated in a microsphere or liposome comprising a compound selected from the group consisting of lecithin, phosphatidylcholine, phosphatidylserine, phosphatidylethanolamine, dilinoleylphosphatidylcholine, lysolipids, dipalmitoylphosphatidylcholine, distearoylphosphatidylcholine, phosphatidylcholine, phosphatidic acid, sphingomyelin, cholesterol, cholesterol sulfate, cholesterol hemisuccinate, tocopherol hemisuccinate, phosphatidylethanolamine, phosphatidylinositol, fatty acids, palmitic acid, stearic acid, oleic acid, linolenic acid, linoleic acid, glycosphingolipids, glucolipids, glycolipids, sulphatides, lipids bearing sulfonated mono-, di-, oligo- or polysaccharides, lipids with ether and ester-linked fatty acids, triglycerides, lipoproteins, cholesterol, a lipid, a polymerized lipid and a derivatized lipid.

51. The preparation of claim 50, wherein the preparation further comprises a medium chain triglyceride.

52. The preparation of claim 51, wherein the preparation comprises calcium, diindolylmethane, red wine extract, calcium D-glucarate, medium chain triglyceride and lecithin.

53. The preparation of claim 52, wherein the preparation comprises 24 mg calcium, 100 mg diindolylmethane, 200 mg red wine extract, 200 mg calcium D-glucarate, 45 mg medium chain triglyceride and 45 mg lecithin.

54. A preparation or formulation comprising at least one member of a first group and at least one member of a second group, wherein the member of the first group comprises a plant indole, and the member of the second group comprises a fat soluble vitamin or equivalent compound.

55. The preparation or formulation of claim 54, wherein the fat soluble vitamin or equivalent compound comprises vitamin A, D, E or K, retinol, retinol derivatives, retinoic acid, carotenoids, lycopene, lutein, 1,25-dihydroxyvitamin D, calciferol, calcipotriol, cholecalciferol, ergocalciferol (vitamin D2), irradiated ergocalciferol, alpha tocopherol, 5 tocopherol, tocopheryl acetate, tocopheryl succinate, phyloquinones, menaquinones, menadione or menatetrenone (vitamin K2).

56. A preparation or formulation comprising at least one member of a first group and at least one member of a second group, wherein the member of the first group 10 comprises a plant indole, and the member of the second group comprises a lycopene, carotenoid, carotenes, xanthophyll, alpha-carotene, beta-carotene, lutein, cytoxanthin, zeaxanthin or a plant-derived lycopene.

57. The preparation or formulation of claim 56, wherein the plant-derived 15 lycopene comprises a blueberry-derived or a tomato-derived lycopene.

58. A preparation or formulation comprising at least one member of a first group and at least one member of a second group, wherein the member of the first group comprises a medium chain triglyceride (MCT), and the member of the second group 20 comprises a fat soluble vitamin or equivalent compound.

59. The preparation or formulation of claim 58, wherein the fat soluble vitamin or equivalent compound comprises vitamin A, D, E or K, retinol, retinol derivatives, retinoic acid, carotenoids, lycopene, lutein, 1,25-dihydroxyvitamin D, calciferol, calcipotriol, 25 cholecalciferol, ergocalciferol (vitamin D2), irradiated ergocalciferol, alpha tocopherol, tocopherol, tocopheryl acetate, tocopheryl succinate, phyloquinones, menaquinones, menadione or menatetrenone (vitamin K2).